






“Economic freedom and democracy: determinant factors in increasing macroeconomic stability”

AUTHORS	Yuri Yevdokimov
	Leonid Melnyk  https://orcid.org/0000-0001-7824-0678
	Oleksii Lyulyov  https://orcid.org/0000-0002-4865-7306
	Olga Panchenko  https://orcid.org/0000-0002-8660-693X
	Victoria Kubatko  https://orcid.org/0000-0001-9114-068X
ARTICLE INFO	Yuri Yevdokimov, Leonid Melnyk, Oleksii Lyulyov, Olga Panchenko and Victoria Kubatko (2018). Economic freedom and democracy: determinant factors in increasing macroeconomic stability. <i>Problems and Perspectives in Management</i> , 16(2), 279-290. doi: 10.21511/ppm.16(2).2018.26
DOI	http://dx.doi.org/10.21511/ppm.16(2).2018.26
RELEASED ON	Thursday, 07 June 2018
RECEIVED ON	Friday, 27 April 2018
ACCEPTED ON	Wednesday, 30 May 2018
LICENSE	 This work is licensed under a Creative Commons Attribution 4.0 International License
JOURNAL	"Problems and Perspectives in Management"
ISSN PRINT	1727-7051
ISSN ONLINE	1810-5467
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”



NUMBER OF REFERENCES

47



NUMBER OF FIGURES

3



NUMBER OF TABLES

6

© The author(s) 2018. This publication is an open access article.



BUSINESS PERSPECTIVES



LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10, Sumy,
40022, Ukraine

www.businessperspectives.org

Received on: 27th of April, 2018

Accepted on: 30th of May, 2018

© Yuri Yevdokimov, Leonid Melnyk,
Oleksii Lyulyov, Olga Panchenko,
Victoria Kubatko, 2018

Yuri Yevdokimov, Ph.D., Professor,
Department of Economics, University
of New Brunswick, Canada.

Leonid Melnyk, Doctor of
Economics, Professor, Head of
Department of Economics and
Business Administration, Director of
Research Institute for Development
Economics (IDE), Sumy State
University, Ukraine.

Oleksii Lyulyov, Ph.D., Associate
Professor, Department of Economics
and Business Administration, Sumy
State University, Ukraine.

Olga Panchenko, Ph.D., Senior
Lecturer, Department of
Management, Sumy State University,
Ukraine.

Victoria Kubatko, Assistant at
Department of Management, Sumy
State University, Ukraine.



This is an Open Access article,
distributed under the terms of the
[Creative Commons Attribution 4.0
International license](https://creativecommons.org/licenses/by/4.0/), which permits
unrestricted re-use, distribution,
and reproduction in any medium,
provided the original work is properly
cited.

Yuri Yevdokimov (Canada), Leonid Melnyk (Ukraine), Oleksii Lyulyov (Ukraine),
Olga Panchenko (Ukraine), Victoria Kubatko (Ukraine)

ECONOMIC FREEDOM AND DEMOCRACY: DETERMINANT FACTORS IN INCREASING MACROECONOMIC STABILITY

Abstract

The main goal of the article is to analyze the role and influence of economic freedom on macroeconomic stability. For this purpose, the authors used the integrated index of economic freedom, calculated by the Heritage Foundation and Democracy Index. It is noted that this index indicator was calculated by the experts from the World Bank using the index of voice and accountability. In the paper, the authors used the multinational panel dataset for 11 countries of the EU for the purpose of checking the correlation between economic freedom, democracy and macroeconomic stability. It should be highlighted that the abovementioned 11 countries are related by the fluctuation of economic growth during the transformation process (1996–2016) from communist party to the democracy and political pluralism. In addition, the authors proposed to add the indicators of political stability and trade openness, which allowed to take into account implementation of flexible macroeconomic instruments, including monetary policy, which towards increasing the economic growth, employment and financial development of the countries. The findings are directed received using the regression equation with fixed and random effects showed the high level of correspondence of the model used with the original observations. Despite the chosen approach to estimate the macroeconomic stability, the findings showed that there is a positive and statistically significant impact of economic freedom and democracy on macroeconomic stability.

Keywords

integrated index, panel data analysis, stability, political
stability, trade openness

JEL Classification

C33, E37, E61

INTRODUCTION

During the last twenty years, the transformation process in the EU countries have been continuing from the monopoly of the communist party to the democracy and political pluralism in political sphere and in the economy sphere from the planning to the market economy, which could be characterized by the different pace and tendencies of economic growth.

In this paper, for the analyss, the authors chose 11 countries, which were divided by the regions (in the brackets – year of transformation beginning): a) Central and Eastern Europe and the Baltic countries: Lithuania (1992), Latvia (1992), Poland (1990); (b) South-Eastern Europe: Bulgaria (1991), Croatia (1990), Romania (1991); c) former post-Soviet republics, with the exception of the Baltic countries: Armenia (1991), Belarus (1991), Georgia (1991), Moldova (1991), Ukraine (1991).

Thus, the results of the analyss showed that among 11 countries, the largest heterogeneity in GDP level, measured by variation coefficient, was observed in Armenia (75.53%) and Romania (70.06%). However, in absolute terms, Armenia's GDP grew by USD 9299.7 million, while Romania's was almost 17 times more – USD 15.8593 million.

It is noted that among 11 countries, none of the countries was marked by the fluctuation of homogeneity of the allocated indicator within 0-30%. Firstly, it showed the fluctuation's impact on the dynamics of the transformational process in the countries. The GDP fluctuations were allocated by the Hodrick-Prescott time series cyclic component. The results of the analysis allowed to make a conclusion about the existence of close relationship between the trend of short-term fluctuations and the countries development.

Thus, the correlation coefficient of GDP fluctuation among the most countries was 0.5641 and higher. At the same time, among the EU countries, this indicator was not less than 0.8023. It means that 80% of fluctuations correspond to the implementation of the EU policy in order to reduce the inequality in the economic and social development of the EU members.

Table 1. Correlation analysis of the GDP fluctuations in the chosen countries during the period 1990–2016

Source: The authors' own calculations based on World Bank data (World Bank, 2017).

Correlation coefficient of the GDP fluctuations	Lithuania	Latvia	Poland	Bulgaria	Croatia	Romania	Armenia	Belarus	Georgia	Moldova	Ukraine
Lithuania	1.0000	–	–	–	–	–	–	–	–	–	–
Latvia	0.9743	1.0000	–	–	–	–	–	–	–	–	–
Poland	0.9316	0.8812	1.0000	–	–	–	–	–	–	–	–
Bulgaria	0.8442	0.8023	0.9287	1.0000	–	–	–	–	–	–	–
Croatia	0.9020	0.8808	0.8739	0.8753	1.0000	–	–	–	–	–	–
Romania	0.9248	0.9228	0.9422	0.9388	0.8896	1.0000	–	–	–	–	–
Armenia	0.9010	0.8971	0.9438	0.9148	0.8040	0.9729	1.0000	–	–	–	–
Belarus	0.7839	0.6887	0.8809	0.8283	0.6591	0.7918	0.8479	1.0000	–	–	–
Georgia	0.7220	0.6462	0.8346	0.8355	0.5717	0.7880	0.8693	0.9230	1.0000	–	–
Moldova	0.7336	0.6126	0.7945	0.6849	0.5641	0.6571	0.6947	0.8271	0.7995	1.0000	–
Ukraine	0.8457	0.7920	0.9005	0.8861	0.7993	0.8509	0.8822	0.8751	0.8741	0.7173	1.0000

It is noted that Hodrick-Prescott filter is the most popular method to allocate the trend and circular (fluctuation) component of dynamic series (Ravn & Uhlig, 2002):

$$y_t = \tau_t + c_t, \quad (1)$$

where y_t – factual dataset; τ_t – trend component, allocated from the factual dataset through the equation:

$$\min_{\tau_t} \sum_{t=1}^T \left((y_t - \tau_t)^2 + \lambda ((\tau_{t+1} - \tau_t) - (\tau_t - \tau_{t-1}))^2 \right), \quad (2)$$

c_t – circular (fluctuation) component.

In this research, the abovementioned fluctuations were determined as a base for the following transformations: empowered democracy and implemented market economy, consequently, to widen the economic freedom.

1. LITERATURE REVIEW

In the theoretical research, Hall and Lawson (2014) who devoted their analyses on scientific papers on economic freedom have emphasized that more than 402 papers used the Economic Freedom of the World (EFW) index (Gwartney et al., 2017) as the evaluation tool of economic freedom level.

It should be noticed that this approach was proposed by Gwartney, Block, and Lawson.

Thus, the scientists underlined that half of the abovementioned papers used EFW as explanatory variable in the empirical models. In addition, two thirds of those papers indicated that the level of economic freedom has the positive and significant

impact on the economic growth, the social standard of living, etc. In addition, in his paper, Nguedie (2017) approved the relationship between corruption, investment and growth. Besides, De Haan and Sturm (2000) on the basis of the analysis results of more than 80 countries made the conclusion that the economic growth ensures the increase of the rate of economic development. At the same time, the scientists pointed out that the stable economic state did not affect the level of economic freedom. The problems of economic freedom and democracy are very relevant for emerging countries (involving post-Soviet) with the transition process (Pilia, 2017). Justesen (2008) analyzed the same problem using the Granger causality tests for panel data for the period 1970–1999. His results also confirmed the positive correlation between economic freedom and economic growth, the volume of foreign direct investment and the absence of the inverse relationship between the abovementioned indicators.

For the purpose of investigating the correlation between economic freedom and economic growth (GDPPER) in 23 upper-middle income countries from 1995 to 2010, Kilic and Arica (2014) used two log econometric models. The first model used level of inflation (CPI) as a main indicator and the integral indicator of EFW as the explanatory variable. Besides, the second model used the EFW decomposition (values of business (BF), financial (FF), investment (IF), trade (TF), fiscal (FIS), monetary (MF), property rights (PR), government (GS) freedom indexes). The empirical findings approved the positive and significant correlation between the EFW with all his parameters and economic growth:

$$\log(GDPPER)_{it-1} = \gamma_0 + \gamma_1 EFW_{it-1} + \gamma_2 CPI_{it-1}, \quad (3)$$

$$\begin{aligned} \log(GDPPER)_{it-1} = & \beta_0 + \beta_1 \log(BF)_{it-1} + \\ & + \beta_2 \log(FF)_{it-1} + \beta_3 \log(IF)_{it-1} + \\ & + \beta_4 \log(TF)_{it-1} + \beta_5 \log(MF)_{it-1} + \\ & + \beta_6 \log(FIS)_{it-1} + \beta_7 \log(PR)_{it-1} + \\ & + \beta_8 \log(GS)_{it-1} + \beta_9 \log(CPI)_{it-1}. \end{aligned} \quad (4)$$

Besides, the results of Banaian and Luksetich (2001) explained the opportunities to reduce inflation as the instrument of macroeconomic stability in the country through the implementation of the high level of economic freedom.

The conclusion obtained by the abovementioned scientists approved the theory of A. Smith: the economic freedom gives opportunity to functioning of the invisible hand, as a consequence, the welfare could be achieved not only for the separate class of the society, but also for the whole society (Smith, 2007).

On the contrary, Stiglitz in the work “The anatomy of a murder: Who killed America’s economy?” explained that the last financial recession was provoked by using the inefficient incentives without effective regulation (Stiglitz, 2009). According to his research, only through the implementation of regulatory reforms the same crisis could be avoided in the future. In addition, the necessity to limit the economic freedom through the implementation of regulatory market mechanisms as a way to prevent the emergence of the crisis was highlighted by the following scientists: Klein (2007), Krugman (2008).

According to the works of Marcos de Barros Lisboa and Zeina Abdel Latif (2014), the scientists indicated that “Among poor countries, there seems to be a great diversity of political regimes or degrees of democracy, while in richer countries, the diversity is reduced, with a much clearer relationship between democracy and income”.

It should be underlined that most countries with open institutions, according the EFW index classification (Gwartney et al., 2017), had the democratic political system (Unit, 2017) and demonstrated the high level of GDP per capita. Thus, in 2017, among 34 countries, which had the highest level of economic freedom 70-100 according to the EFW index, only two countries, Qatar and United Arab Emirates, had the authoritarian regimes and there were three hybrid regimes (Armenia, Macedonia, Georgia). In other words, 85% demonstrate the flawed and full democracies.

However, despite the strong dependence, the theoretical and empirical findings of the democracy’s impact on the economic growth and macroeconomic stability had the contradictory nature. Thus, the findings of study of developing countries for the period 1998–2002 showed that democracy had the negative impact on the economic growth (Abeyasinghe, 2004). Hristos Doucouliagos and

Source: The authors' own calculations based on World Bank data (World Bank, 2017), EFW (Gwartney et al., 2017), Democracy Index (Unit, 2017).

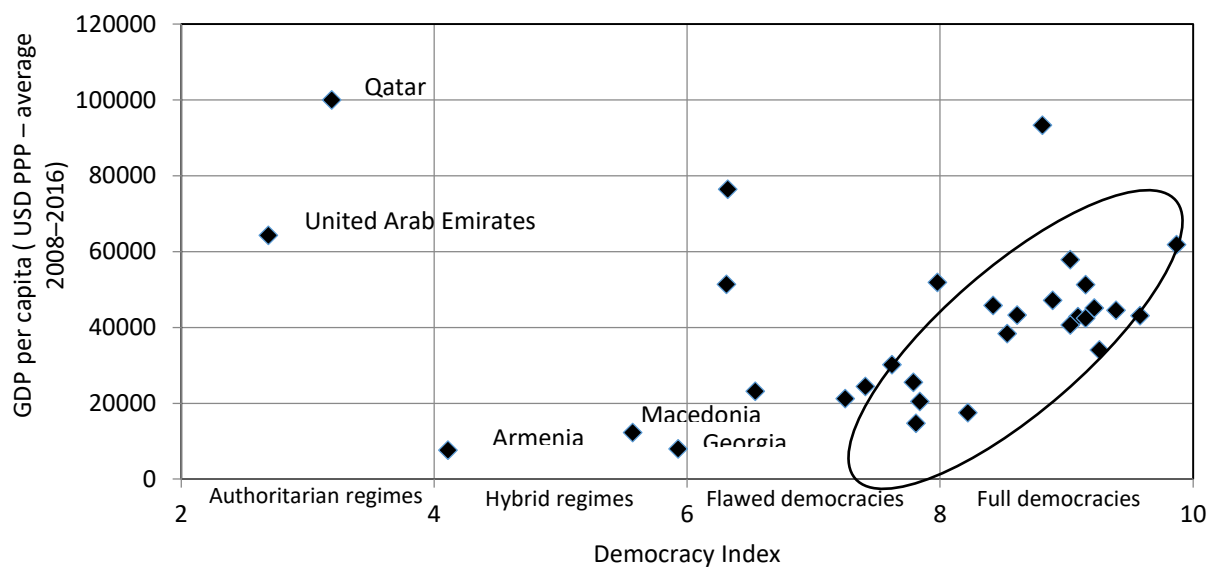


Figure 1. The ratio of the democracy level and GDP per capita in countries with the EFW index

Mehmet Ali Ulubaşoğlu obtained the results of meta-analysis and meta-regression analysis to the total pool of 84 studies with 483 published estimations of the impact of democracy on the economic growth and approved it by the five main conclusions: lack of information that democracy has the negative influence on economic growth; democracy has the huge indirect impact on the economic growth through the different channels; existence of regional connections and consequences of studying the relations, in spite of absence of such effect for all countries; use of different methods, approaches, mathematical models and parameters justified the gaps between the findings from different scientists; despite zero effect of democracy on economic growth, the economic freedom has the statistically significant, positive and direct effect (Doucouliagos & Ulubaşoğlu, 2008).

The investigation of the relationship between democracy and economic growth through the volatility channel, conducted by Ahmed Mushfiq Mobarak (2005), showed that the increase of standard deviation of Democracy Index by 1% will provoke the decrease of the standard deviation of growth rates by 1%.

Mohamed Fenira (2014), using the inflation index (like an assessment of the macroeconomic stability), as well as Martinez-Vazquez and Macnab (2006) developed the regression equation (5) for

analyzing the impact of democracy on inflation in 124 countries during the period 1996–2012. The scientists approved that democracy effect, among other economic and institutional parameters in equation (5), was statistically significant at the level of 1% and was negatively correlated with inflation:

$$INF_{it} = \alpha + \beta_1 (DEM)_{it} + \beta_2 (POLSTAB)_{it} + \beta_3 (MONgrowth)_{it} + \beta_4 \ln(RES)_{it} + \beta_5 Growth_{it} + \beta_6 Trade_{it}, \quad (5)$$

where INF_{it} – Consumer Price Index (annual %), DEM_{it} – Democracy Index; $MONgrowth_{it}$ – average annual growth rate in money and quasi money, $\ln RES_{it}$ – logarithm of total reserves, $POLSTAB_{it}$ – political stability index, $Growth_{it}$ – percentage growth rate of GDP, $Trade_{it}$ – imports plus exports as a percentage of GDP.

Subramanian and Satyanath (2004) underlined that democratic political institutions are the most statistically significant determinations of long-term impact on macroeconomic stability on a par with determinants of conflicts and economic institutions. Improving the democracy level could decrease the negative impact of conflicts on the macroeconomic stability, so “... one standard deviation improvement in democracy leads to a 3.6-fold decline in nominal instability” (Subramanian & Satyanath, 2004).

The aim of the article is to estimate the impact of economic freedom and democracy on macroeconomic stability of the country.

2. MATERIALS AND METHODS

For the purpose of estimating the impact of economic freedom and democracy on macroeconomic stability of the country, the empirical model which based on the correlation could be used:

$$MI_{it} = f(EF_{it}, DEM_{it}, X_{it}), \quad (6)$$

where MI represents the various alternative measures of country's macroeconomic stability in period t , EF – assessment of the level of economic freedom in the country in period t , DEM – the level of the democracy in the country in period t , X – is a vector of other conditioning variables.

It should be noticed that the huge number of scientists have already approved the correlation between macroeconomic stability and economic indicators. Thus, Kyrychenko et al. (2018), Vasylieva et al. (2018) analyzed how the macroeconomic stability is correlated with the main indicators of economic growth, innovation potential (Kasyanenko et al., 2013) and financial imbalance (Lunyakov et al., 2013). Besides, the scientists in the paper of Melnyk et al. (2018) using the different approaches to estimate the macroeconomic stability, which allowed to obtain more precise findings. For that matter, as a dependent variable of the empirical model, the authors proposed to use the alternative approaches to estimate the level of macroeconomic stability: Consumer Price Index (CPI) (Martinez-Vazquez & Macnab, 2006); Misery Index (Iqbal & Nawaz, 2010; Okonkwo & Godslove, 2015); aggregate data for macroeconomic stability pentagon (MSP) (Kolodko, 1993); indicator of macroeconomic stability (IMS) (Zaman & Drcelic, 2009).

Traditionally, the essential factor EF is estimated by the integral indicators, calculated by the American research organization Heritage Foundation (Index of Economic Freedom (IEF, 2017) and the Fraser Institute (The Economic

Freedom of the World index (EFW)) (Gwartney et al., 2017). It allows to analyze the large rule of countries for a long period among the different alternative approaches to evaluating the economic freedom.

The main factors, used for calculating IEF index are classified into 5 groups. It should be noticed that each indicator has the equal power of influence on integral indicator IEF and is estimated according to the scale from 0 to 100. According to this index, the countries could be divided into the following groups:

- free – with index of 80-100 points;
- mostly free – with index of 70-79.9 points;
- moderately free – with index of 60-69.9 points;
- mostly unfree – with index of 50-59.9 points;
- repressed – with index of 0-49.9 points (Heritage Foundation, 2017).

The Fraser Institute calculates EFW index through 24 indicators within five main directions, explained in the paper of Gwartney et al. (2017). The countries' rating is calculated based on dividing all the studied countries according to the scale from 0 to 10, where 10 is the highest possible rating and zero (0) is the lowest.

At the same time, the value of correlation coefficient between IEF and EFW indices for chosen 11 countries during the period 1996–2017 is approximately 1 (Table 2), which approved the multicollinearity between the abovementioned indicators. Thus, their dynamic changes could have the same impact on dependent variable of empirical model (6). The multicollinearity of IEF and EFW could be described by including the same factors during the development of the integral index.

The way that the chosen indicators have the same tendency of changes in time, within the framework of this research, we will use as the essential factor EF the integral index IEF, which had already been calculated by the Heritage Foundation.

Table 2. Correlation between IEF and EFW in the chosen countries during the period 1996–2017

Source: The authors' own calculations based on Heritage Foundation (2017), Gwartney et al. (2017).

Correlation coefficient of Economic Freedom Indexes	Heritage Foundation Index of Economic Freedom (100 = most free; 0 = repressed)	Fraser Institute Economic Freedom of the World Index (10 = most free; 0 = least free)
Index of Economic Freedom (IEF)	1.0000	0.879
Economic Freedom of the World index (EFW)	0.879	1.0000

The different approaches to define the “democracy” as a term stipulate the existence of different approaches and methods to estimate the democracy level (Dutt & Mobarak, 2016). That is why Mohamed Fenira (2014), in his work analyzing the different approaches to estimate the democracy level (Polity IV, established by Marshall and Jaggers, the Freedom House index, or that of the International Country Risk Guide, etc.), had proposed to use “voice and accountability” democracy index, calculated annually and published by World Bank. This index was developed by the experts Daniel Kaufmann, Aart Kraay, and Massimo Mastruzzi from the World Bank in 1996 year.

Mohamed Fenira asserts that approach has a lot of advantages among the others alternative methods: firstly, calculation of the democracy index based on 25 databases, developed by 18 organizations; secondly, this index includes both participation and contestation criteria (Fenira, 2014).

At the same time, from the authors' point of view, the proposed democracy index allows to analyze the bigger time period to estimate the impact of democracy on macroeconomic stability, in spite of democracy index, developed by “The Economist Intelligence Unit” in 2006 (Unit, 2017). Moreover, it will be allowed to avoid the expert methods to calculate the integral indicator of freedom house index (Freedom House, 2000) and democracy index (“The Economist Intelligence Unit” (Unit), 2017).

It should be noticed that the calculation of “voice and accountability” democracy index takes into

account the indicators, which estimate the possibility of the civil society to take part in the government elections, as well as freedom of expression, freedom of association and free media. The “voice and accountability” democracy index is estimated according to the following scale: from –2.5 (weak) to 2.5 (strong) governance performance.

It should be underlined that IMF and World Bank will allocate financial resources to emerging countries if they have the stable political situation. That is why the emerging countries should implement the main principles of democracy (Abeyasinghe, 2004).

The authors agreed with Ranmali Abeyasinghe (2004), that democracy isn't the result of the political stability, insofar as particularly the totalitarian regime could be characterized as totally stable political situation. In this case, in addition to the economic freedom and democracy, we proposed to take into account the estimation of political stability and absence of violence/terrorism (POLSTAB), calculated by the experts from World Bank.

The democracy regime and political stability will allow the countries to adapt to external changes and functional requirements, as a result, to achieve the desired level of macroeconomic stability through implementing the flexible macroeconomic instruments, including the monetary policy, aimed at strengthening economic growth and employment.

Arvind Subramanian and Shanker Satyanath (2004) in their research argued that the economic transparency had the statistically significant impact on macroeconomic stability as the political stability. Thus, the economic transparency could be measured as the percentage of total trade to GDP (Open). Besides, the transparency of trade is a key factor of financial development in the different countries, which indicated the country's macroeconomic results. Moreover, this indicator could be the effective mechanism to reallocate the welfare in interests of the rich (Rajan & Zingales, 2003).

The empirical model (7) for analyzing the panel data could be used as a regression equation with fixed and random effects (Clark & Linzer, 2015):

$$Y_{it} = \alpha + X'_{it}\beta + v_{it}, \quad i = 1, \dots, N; \quad t = 1, \dots, T, \quad (7)$$

where α – constant term of regression, β – coefficient vector of dimensionality, X'_{it} – vector line of matrix, which explained the variables, t – time series of the model, $v_{it} = u_i + \varepsilon_{it}$ – simulation of the random value, u_i – unobservable individual effect, which doesn't relate with time and characterize the object, excluded from the regression model, ε_{it} – random parameters.

For the purpose of choosing the model, which most accurately describes dataset, the Hausman test is used. It allowed to estimate and choose the objective model between determinant and random (Bell & Jones, 2015).

It is noted that using of panel data for empirical research according to Baltagi (2005) has a range of significant advantages among the other analysis techniques.

According to the abovementioned, the empirical model (7) could be presented in the regression equation:

$$MI_{it} = a_1 IEF_{it} + a_2 DEM_{it} + a_3 POLSTAB_{it} + a_4 Open_t + e_t, \quad (8)$$

where e_t is the random error term.

3. RESULTS

The dynamics of the economic freedom level of the countries is shown in Figure 2. The most positive changes in the economic freedom during the period 1995–2017 can be observed in Moldova (+75.76%), Georgia (+72.34%), Armenia (+66.59%), Romania (+62.47%) and Lithuania (+52.52). However, despite faster growth in Moldova in 2017, Moldova was in a group with mostly unfree (58) level of economic freedom. At the same time, Georgia (76), Armenia (70.3), Lithuania (75.8) were in mostly free group and Romania (69.7) – moderately free. Unfortunately, Ukraine, among the studied countries, had the lowest rate of increase of the abovementioned index (+20.55%). In addition, only in Ukraine, the level of economic freedom decreased in 2017 to 48.1 compared with 2007, as a result, Ukraine was called a country with depressed economy.

Ratio of the average the Index of Economic Freedom *IEF* to Democracy Index (*DEM*) (Figure 3) showed that the EU countries have already achieved the huge scale of implementation of the democracy and economic freedom, which comply with the main EU requirements (Schimmelfennig & Scholtz, 2008). At the same time, such countries as Ukraine, Belarus, Moldova and Armenia have been keeping the authoritarian regime until the

Source: The authors' own calculations based on Heritage Foundation (2017).

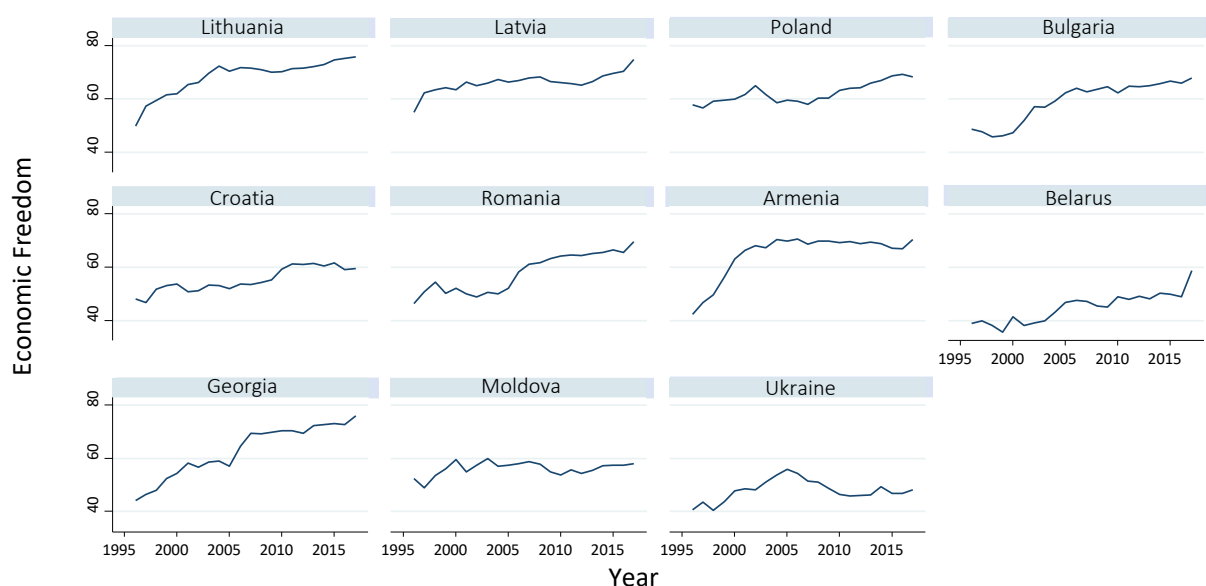


Figure 2. Dynamics of the Index of Economic Freedom (IEF_{it}), 1995–2016

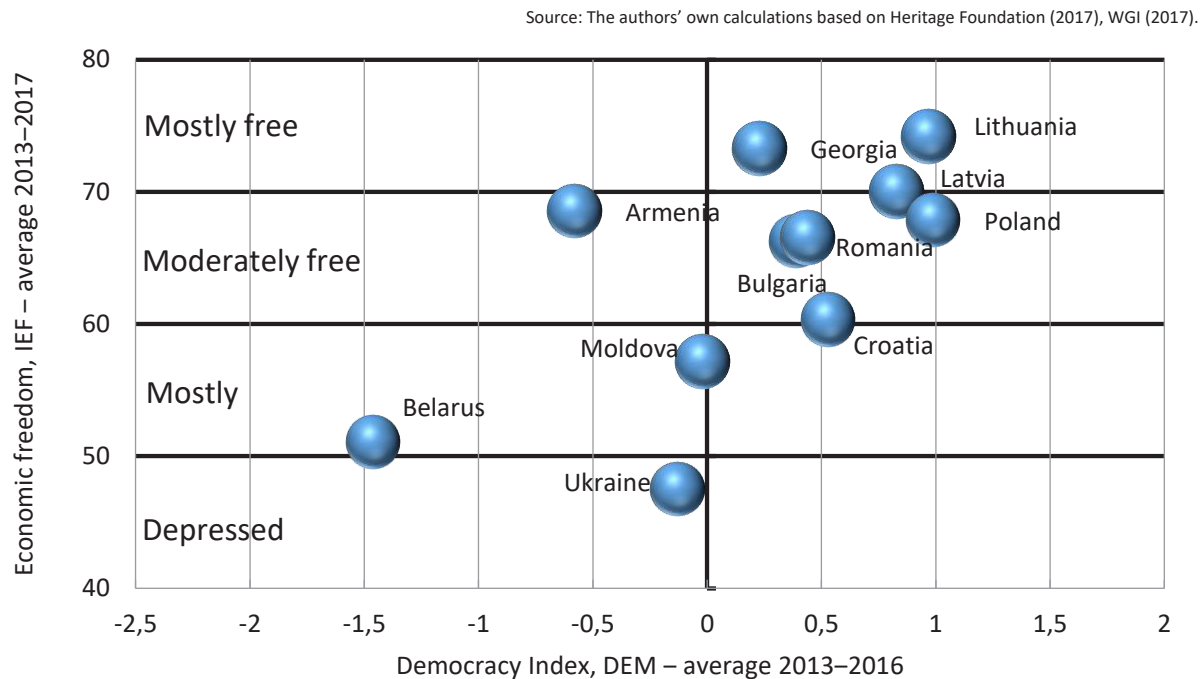


Figure 3. The ratio of the Index of Economic Freedom (*IEF*) to Democracy Index (*DEM*), 2013–2017

present day. These gaps actualized to continue to emphasize the necessity for Ukraine to improve the democratic and economic institutions.

The characteristic of the main explanatory factors of the regression equation (7) and their descriptive statistical characteristics are given in Table 3.

For the purpose of checking the stationary of dataset we used the following tests: Levin, Lin, and Chu test (Levin et al., 2002) and Hadri LM test (Hadri, 2000). Each test checks the zero hypotheses. Thus, according to the Levin, Lin, and Chu test, the zero hypotheses were that the panels

contained unit roots, for Hadri LM test – all panels are stationary. The results in Table 4 showed that all variables indicators, except MSP (by the Levin, Lin, and Chu test), were stationary at the level of 1% (CPI, Misery Index, IMS, IEF, DEM, POLSTAB) and 5% (Open). At the same time, the results of Hadri LM test showed that all indicators weren't stationary. That is why, for the purpose of making the correct interpretation of the findings, the next step was to make the procedure of calculating the first differences statistical dataset. In this case, the obtained results can be interpreted as a rate of increase and, as a result, the stationary dataset can be obtained by the two tests (Table 4).

Table 3. The descriptive statistics of the main dependent and explanatory variables of the regression equation

Source: The authors' own calculations based on Heritage Foundation (2017), WGI (2017), World Bank (2017).

Indicators	Average	Standard deviation	Minimum value	Maximum value
CPI	17.27119	74.24944	-1.538403	1058.374
Misery Index	27.48693	74.01024	4.36	1072.07
MSP	0.3518182	0.1220252	0.07	0.711
IMS	27.65131	6.059809	12.75	45.39
IEF	58.35152	9.199281	35.4	75.2
DEM	0.1331602	0.7173999	-1.77	1.11
POLSTAB	0.1172294	0.5805321	-2.02	1.07
Open	96.11531	0.5805321	-2.02	1.07

Table 4. Results of panel unit root test

Source: The authors' own calculations based on Heritage Foundation (2017), WGI (2017), World Bank (2017).

Variables	Levin, Lin, and Chu test results Ho: Panels contain unit roots Ha: Some panels contain unit roots		Hadri LM test results Ho: All panels are stationary Ha: Some panels contain unit roots	
	Level	First difference	Level	First difference
CPI	-1.5e + 02 (0.0000)*	-1.4e + 02 (0.0000)*	4.7510 (0.0000)*	-3.1505 (0.9992)
Misery Index	-93.2154 (0.0000)*	-1.4e + 02 (0.0000)*	5.0346 (0.0000)*	-3.1522 (0.9992)
MSP	-0.5088 (0.3054)	-5.1089 (0.0000)*	12.7925 (0.0000)*	-1.0861 (0.8613)
IMS	-2.8745 (0.0020)*	-5.6632 (0.0000)*	9.5549 (0.0000)*	-1.1552 (0.8760)
IEF	-2.8886 (0.0019)*	-4.4692 (0.0000)*	30.5347 (0.0000)*	3.0841 (0.1110)
DEM	-2.5426 (0.0055)*	-6.3627 (0.0000)*	16.2661 (0.0000)*	-0.1207 (0.5480)
POLSTAB	-4.3781 (0.0000)*	-11.7543 (0.0000)*	12.8927 (0.0000)*	-1.2945 (0.9023)
Open	-1.8291 (0.0337)**	-8.0908 (0.0000)*	27.8609 (0.0000)*	-1.6039 (0.9456)

Note: The asterisks *, ** and *** represent the significance at 1%, 5% and 10% levels, respectively.

Table 5. Regression model with the fixed effect model FE and random effect model: panel estimation

Source: The authors' own calculations based on Heritage Foundation (2017), WGI (2017), World Bank (2017).

Dependent variable / independent variable	CPI	Misery Index	MSP	IMS
Fixed effect model				
IEF	-2.901209 (0.003)*	-2.920816 (0.002)*	0.012354 (0.006)*	1.049604 (0.000)*
DEM	-2.93148 (0.308)	-2.4444 (0.318)	0.0005174 (0.995)	0.5006118 (0.924)
POLSTAB	-7.91851 (0.613)	-8.181057 (0.602)	0.0593977 (0.079)***	3.380118 (0.113)
Open	0.1250943 (0.731)	0.0877566 (0.810)	-0.0016102 (0.048)**	-0.0281992 (0.581)
Const	172.0129 (0.001)*	187.0571 (0.000)*	0.3494201 (0.000)*	27.00842 (0.000)*
Random effect model				
IEF	-2.484333 (0.000)*	-2.361516 (0.000)*	0.0122631 (0.005)*	1.054153 (0.000)*
DEM	-1.16127 (0.297)	-1.44406 (0.207)	-0.0020348 (0.980)	0.574817 (0.911)
POLSTAB	-4.334779 (0.697)	-5.777976 (0.603)	0.0563453 (0.092)***	3.348887 (0.108)
Open	0.1096612 (0.635)	0.0469464 (0.839)	-0.0016171 (0.045)**	-0.030166 (0.547)
Const	150.7176 (0.000)*	159.6598 (0.000)*	0.3494563 (0.000)*	27.00718 (0.000)*

Note: The asterisks *, ** and *** represent the significance at 1%, 5% and 10% levels, respectively.

The stationary of dataset allowed to develop the regression model (7) with the fixed effect model (FE) and random effect model (Table 5).

The Hausman test proved that the random effect model is more applicable for interpretation than the fixed effect model (Table 6).

The obtained results, presented in Table 6, proved the positive and statistical significant impact (at 1% level) of economic freedom on macroeconomic stability for the analyzed countries regardless of

the methods to estimate the macroeconomic stability. That is, a 1% increase in the Index of Economic Freedom index (IEF) would raise macroeconomic stability by 29% for CPI, Misery Index, 1% – MSP, 10% – IMS. The negative impact of independent parameters on CPI and Misery Index means the positive tendency in the macroeconomic stability. However, for MSP and IMS, the positive value of independent parameters characterizes the achievement of main goals of country's macroeconomic policy: the high pace of industry development; full employment; reduction of the infla-

Table 6. The Hausman test for fixed effect model and random effect model

Source: The authors' own calculations based on Heritage Foundation (2017), WGI (2017), World Bank (2017).

Dependent variable / Test	CPI	Misery Index	MSP	IMS
Chi2(4) = (b - B)'[(V _b - V _B) ⁻¹](b - B)	2.06	2.34	3.39	0.07
Prob > Chi2	0.7244	0.6741	0.4942	0.9994

tion rate; equilibrium of the external payments; support of the stable exchange rate of the national currency, etc. The coefficient of Democracy Index was positive, but wasn't statistically significant for all types of models.

It should be underlined that for MSP model, the growth of macroeconomic stability could be achieved through the implementation of political stability (the indicator was statistically sig-

nificant at 10% level), economic freedom (the indicator was statistically significant at 1% level) and democracy. The obtained results showed that Ukraine EU vector to develop the economy justifies to study the experience of national economy, which had already been integrated into the international network and had already achieved the highest level of economic freedom and democracy, particularly Polish and Lithuanian, Latvian experiences'.

CONCLUSION

In this article, the authors analyzed the impact of economic freedom and democracy on macroeconomic stability. In spite of the huge number of investigation of the correlation between the abovementioned indicators and macroeconomic stability, the findings of their correlation analysis couldn't give opportunity to make conclusion about direction and level of impact.

Thus, within this research, the authors indicated that more than 85% of countries with open institutions (based on The Fraser Institute Economic Freedom of the World Index) had the democratic political system and showed the high GDP per capita. Thus, among 34 countries, which occupied the high level of freedom only two countries, Qatar and United Arab Emirates, had 70-100 points by the EFW index in 2017. It is noted that these countries had the authoritarian regimes and there were three with hybrid regimes (Armenia, Macedonia, Georgia).

For the purpose of making the empirical research of economic freedom and democracy impact on macroeconomic stability, the authors chose 11 countries related by the fluctuation of economic growth during the transformation process (1996–2016) from communist party to the democracy and political pluralism. The results of the analysis showed that the positive and statistical significant impact of economic freedom on macroeconomic stability for chosen countries exists. The same findings could be obtained despite using different types of methods. It should be underlined that Democracy Index had also positive, however, not statistically significant impact for all types of models.

The authors highlighted that the EU integration process for Ukraine, the Strategy of SDG 2030, justified that the key element of countries' competitiveness was the indicator of macroeconomic stability. That is why Ukraine should develop, improve and implement the democratic and economic institutions as a way to achieve the macroeconomic stability.

ACKNOWLEDGEMENT

This research was funded by the grants from the Ministry of Education and Science of Ukraine No g/r 0117U003932.

REFERENCES

1. Abeyasinghe, R. (2004). *Democracy, political stability, and developing country growth: Theory and evidence*. Retrieved from https://digitalcommons.iwu.edu/cgi/viewcontent.cgi?referer=https://www.google.com.ua/&httpsredir=1&article=1000&context=econ_honproj
2. Baltagi, B. (2005). *Econometric Analysis of Panel Data* (3rd ed.). Chichester: John Wiley Sons, Ltd.
3. Banaian, K., & Luksetich, W. A. (2001). Central bank independence, economic freedom, and inflation rates. *Economic Inquiry*, 39(1), 149-161.

4. Bell, A., & Jones, K. (2015). Explaining fixed effects: Random effects modeling of time-series cross-sectional and panel data. *Political Science Research and Methods*, 3(1), 133-153.
5. Bhowmik, D. (2018). Financial Crises and Nexus Between Economic Growth and Foreign Direct Investment. *Financial Markets, Institutions and Risks*, 2(1), 58-74.
6. Clark, T. S., & Linzer, D. A. (2015). Should I use fixed or random effects? *Political Science Research and Methods*, 3(2), 399-408.
7. de Barros Lisboa, M., & Latif, Z. A. (2014). Brazil: Democracy and growth. In *Democracy works, Conference paper*. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.738.4194&rep=rep1&type=pdf>
8. De Haan, J., & Sturm, J. E. (2000). On the relationship between economic freedom and economic growth. *European Journal of Political Economy*, 16(2), 215-241.
9. Doucouliagos, H., & Ulubaşoğlu, M. A. (2008). Democracy and economic growth: a meta-analysis. *American Journal of Political Science*, 52(1), 61-83.
10. Dutt, P., & Mobarak, A. M. (2016). Democracy and policy stability. *International Review of Economics & Finance*, 42, 499-517.
11. Fenira, M. (2014). Democracy: A determinant factor in reducing inflation. *International Journal of Economics and Financial Issues*, 4(2), 363.
12. Freedom House (2000). *Annual survey of freedom country scores, 1972-73 to 1999-00*. Retrieved from <http://freedomhouse.org/ratings/index.htm>
13. Greene, W. H. (2003). *Econometric analysis*. Pearson Education India, Delhi.
14. Gwartney, J., Lawson, R., & Hall, J. (2017). *Economic freedom of the world 2017 annual report*. The Fraser Institute. Retrieved from <https://timbro.se/app/uploads/2017/09/economic-freedom-of-the-world-2017.pdf>
15. Hadri, K. (2000). Testing for stationarity in heterogeneous panel data. *The Econometrics Journal*, 3(2), 148-161.
16. Hall, J. C., & Lawson, R. A. (2014). Economic freedom of the world: An accounting of the literature. *Contemporary Economic Policy*, 32(1), 1-19.
17. Harold, N. Ng. Yan (2018). Econometric analysis of long and short-run effects of exports on economic growth in Cameroon (1980–2016). *Financial Markets, Institutions and Risks*, 2(1), 50-57.
18. Heritage Foundation (2017). Index of Economic Freedom: Promoting Economic Opportunity and Prosperity. *The Heritage Foundation and the Wall Street Journal, Washington DC*. Retrieved from <https://www.heritage.org/>
19. Iqbal, N., & Nawaz, S. (2010). Fiscal decentralization and macroeconomic stability: Theory and evidence from Pakistan.
20. Justesen, M. K. (2008). The effect of economic freedom on growth revisited: New evidence on causality from a panel of countries 1970–1999. *European Journal of Political Economy*, 24(3), 642-660.
21. Kasyanenko, V. O., Vasylieva, T. A. (2013). Integral assessment of innovation potential of Ukraine's national economy: A scientific methodical approach and practical calculations. *Actual Problems of Economics*, 6(144), 50-59.
22. Kaufmann, D., Kraay, A., & Mastruzzi, M. (2011). The worldwide governance indicators: methodology and analytical issues. *Hague Journal on the Rule of Law*, 3(2), 220-246.
23. Kilic, C., Arica, F. (2014). Economic Freedom, Inflation Rate and Their Impact on Economic Growth: A Panel Data Analysis. *Romanian Journal of Economic Forecasting*, 17(1), 160-176.
24. Klein, N. (2007). Democracy born in chains: South Africa's constricted freedom. *The shock doctrine: The rise of disaster capitalism*, 194-217.
25. Kolodko, G. W. (1993). Stabilization, recession and growth in a postsocialist economy. *MOCT-MOST: Economic Policy in Transitional Economies*, 3(1), 3-38.
26. Krugman, P. (2008). *The Return of Depression Economics and the Crisis of 2008*. W.W. Norton, New York.
27. Kyrychenko, K., Lyulyov, O., Vasylieva, T., & Leonov, S. (2018). Macroeconomic stability and its impact on the economic growth of the country. *Montenegrin Journal of Economics*, 14(1), 159-170.
28. Levin, A., Lin, C. F., & Chu, C. S. J. (2002). Unit root tests in panel data: asymptotic and finite-sample properties. *Journal of econometrics*, 108(1), 1-24.
29. Lunyakov, O. V., Vasilyeva, T. A., & Leonov, S. V. (2013). Analysis of internal and external imbalances in the financial sector of Ukraine's economy. *Actual Problems of Economics*, 12(150), 176-184.
30. Martinez-Vazquez, J., & Macnab, R. M. (2006). Fiscal Decentralization, Macrostability and Growth, Hacienda Pública Española. *Revista de Economía Pública*, 179(4), 25-49.
31. Melnyk, L., Sineviciene, L., Lyulyov, O., Pimonenko, T., & Dehtyarova, I. (2018). Fiscal decentralization and macroeconomic stability: The experience of Ukraine's economy. *Problems and Perspectives in Management*, 16(1), 105-114. [http://dx.doi.org/10.21511/ppm.16\(1\).2018.10](http://dx.doi.org/10.21511/ppm.16(1).2018.10)
32. Mobarak, A. M. (2005). Democracy, volatility, and economic development. *Review of Economics and Statistics*, 87(2), 348-361.
33. Nguedie, Y. H. N. (2018). Corruption, Investment and Economic Growth in Developing Countries: A Panel Smooth Transition Regression Approach. *SocioEconomic Challenges*, 2(1), 63-68.
34. Okonkwo, O. N., & Godslove, E. K. (2015). Fiscal Decentralization and Nigerian Macroeconomic Performance and Economic Stability. *International Journal of Economics and Finance*, 7(2), 113-121.

35. Pilia Giulia (2017). Estonia and Lithuania in transition: A compared analysis of the change and its costs and benefits. *Business Ethics and Leadership*, 1(2), 78-95.
36. Prince, T. (2017). Behavioral Finance and the Business Cycle. *Business Ethics and Leadership*, 1(4), 28-48.
37. Rajan, R. G., & Zingales, L. (2003). The great reversals: the politics of financial development in the twentieth century. *Journal of financial economics*, 69(1), 5-50.
38. Raphael, Louis H. E. (2018). A new economic order for global prosperity. *SocioEconomic Challenges*, 1(2), 52-58.
39. Schimmelfennig, F., & Scholtz, H. (2008). EU democracy promotion in the European neighbourhood: political conditionality, economic development and transnational exchange. *European Union Politics*, 9(2), 187-215.
40. Smith, A., Soares, S. M. (Ed.) (2007). *An Inquiry into the Nature and Causes of the Wealth of Nations*. MetaLibri Digital Library. Retrieved from https://www.ibiblio.org/ml/libri/s/SmithA_WealthNations_p.pdf
41. Stiglitz, J. E. (2009). The anatomy of a murder: Who killed America's economy? *Critical Review*, 21(2-3), 329-339.
42. Subramanian, M. A., & Satyanath, M. S. (2004). *What determines long-run macroeconomic stability? Democratic institutions* (No. 4-215). International Monetary Fund.
43. Unit, E. I. (2017). *The Economist Intelligence Unit's Democracy Index*. Retrieved from <https://infographics.economist.com>
44. Vasylieva, T. A., Lyulyov, O. V., Leonov, S. V. (2018). Macroeconomic stability evaluation in countries of lower-middle-income economies. *Bulletin of the National Mining University*, 1, 138-146.
45. WGI (2017). *The Worldwide Governance Indicators*. Retrieved from <https://info.worldbank.org/governance/wgi>
46. World Bank (2017). *World Development Indicators 2017*. Retrieved from <https://data.worldbank.org/indicator>
47. Zaman, C., & Drcelic, B. (2009). *Macro-Stabilisation Issues in the Serbian Economy: Methodological Evaluation*. Retrieved from <http://ssrn.com/abstract=1521660>